IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Sophie Vrzic
Serial No. 10/020,833
Filed: 12/13/2001
For: **PRIORITY SCHEDULER**

Examiner: Meucci, Michael D.
Art Unit: 2142

Mail Stop Appeal Brief – Patents
Commissioner for Patents
PO Box 1450
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Sir:

The present **REPLY BRIEF** is filed in response to the Examiner's Answer mailed April 5, 2007. If any fees are required in association with this reply brief, the Director is hereby authorized to charge them to Deposit Account 50-1732, and consider this a petition therefor.

REPLY BRIEF

A. Introduction

The independent claims 1, 10, 19, and 28 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Bahl in view of Ketcham and Rananand. Claims 1, 10, 19, and 28 all recite that the data units are scheduled for transmission based on a prioritization factor such that *more emphasis is placed on fairness when many users are close to the required data rate and more emphasis is placed on maximizing throughput when all users are far from the required data rate.* The cited references fail to teach or suggest at least this limitation. The Patent Office admits that Bahl and Ketcham fail to disclose a scheduling technique where *more emphasis is placed on fairness when many users are close to the required data rate and more emphasis is placed on maximizing throughput when all users are far from the required data rate*, but instead relies on Rananand to teach this limitation (Final Office Action mailed April 24, 2006, p. 5). However, Rananand does not teach or suggest this limitation either, and thus the combination of Bahl, Ketcham, and Rananand fails to teach or suggest each and every element of the claimed invention.

B. Argument

Claims 1, 10, 19, and 28 all recite that the data units are scheduled for transmission based on a prioritization factor such that *more emphasis is placed on fairness when many users are close to the required data rate and more emphasis is placed on maximizing throughput when all users are far from the required data rate.* The limitation at issue has two primary parts where each part has one sub-part. The Patent Office has failed to show where each of the parts and the corresponding sub-parts are found in Rananand. One part is to a) maximize throughput b) *when all users are far from the required data rate.* Rananand does not teach or suggest part b). Rananand does not increase data rate, let alone attempt to maximize throughput, *when all users are far from the required data rate.* In contrast, Rananand simply teaches that when there is extra bandwidth, the throughput may be increased. (Rananand, col. 4, line 54 through col. 5, line 7). As such, this first part of the limitation is not taught or suggested.

In the Examiner's Answer, the Patent Office argues that the fact that higher transfer rates are used when bandwidth is available explicitly purports that transfer rates will be increased until bandwidth is no longer available, thereby maximizing throughput (Examiner's Answer mailed

April 5, 2007, p. 22). However, using higher transfer rates when there is available bandwidth is simply not equivalent to placing **more** emphasis on maximizing throughput **when all the users are far from the required data rate**, as is required by the claimed invention. The Patent Office is apparently reading something into Rananand that is clearly not there. Rananand is silent as to placing **more** emphasis on fairness when all the users are far from the required data rate. In fact, Rananand does not mention any recognition of whether all the users are far from the required data rate. Since Rananand is silent as to realizing **when all the users are far from the required data rate** and then placing more emphasis on maximizing throughput in that situation, Rananand cannot teach the claimed limitation of placing more emphasis on maximizing throughput **when all the users are far from the required data rate**. In fact, as discussed on page 13 of the Revised Appeal Brief filed December 19, 2006, Rananand would still teach increasing the throughput in the situation where the users are close to the required data rate, but there was available bandwidth (see Rananand, col. 4, line 54 through col. 5, line 7). This is the opposite of what would happen according to the claimed invention, where when many users are close to the required data rate, more emphasis is placed on fairness, and more emphasis is placed on maximizing throughput only when all the users are far from the required data rate. Thus, it is clear that Rananand does not teach or suggest that "more emphasis is placed on maximizing throughput when all users are far from the required data rate," as claimed in the present invention.

To the extent that the Patent Office is arguing that by following the teachings of Rananand to increase throughput any time there is available bandwidth, it might be a possible natural result that occasionally throughput might be maximized when all users are far from the required data rate, Appellant submits that such a possible result is not what is claimed in the present invention. Claim 1 requires an access point for scheduling the delivery of data that includes a control system that actively schedules the transmission of data based on a prioritization factor such that *more emphasis is placed on fairness when many users are close to the required data rate and more emphasis is placed on maximizing throughput when all users are far from the required data rate*. Thus, the claimed invention requires that the scheduler play an active role by scheduling the data by placing more emphasis on fairness or more emphasis on maximizing throughput depending on whether many users are close to the required data rate, or whether all users are far from the required data rate. Since Rananand does not determine

whether or not many users are close to the required data rate or whether all users are far from the required data rate, Rananand does not base its scheduling on these features. In fact, since Rananand teaches increasing the throughput anytime there is available bandwidth (for example, even when many users are close to the required data rate), it is clear that Rananand, does not teach scheduling the delivery of data such that *more emphasis is placed on fairness when many users are close to the required data rate and more emphasis is placed on maximizing throughput when all users are far from the required data rate*, according to the claims of the present invention. Thus, Rananand does not teach the limitation for which it is cited.

The other part of the limitation is to a) place more emphasis on fairness b) *when many users are close to the required data rate*. Rananand does not teach or suggest emphasizing fairness, let alone emphasizing fairness *when many users are close to the required data rate*. The Patent Office in the Examiner's Answer merely reiterates its argument from the Final Office Action by pointing to col. 18, lines 7-15 of Rananand as teaching the claim limitations (See Examiner's Answer mailed April 5, 2007, pp. 22-23 and Final Office Action mailed April 24, 2006, p. 20). The cited passage reads:

> Generally, if the buffer occupancy rate is relatively high, in determining an explicit rate value for field 45 of an RM cell that is associated with a particular connection, among a number of connections serviced by the particular output port module 61(*p*), the RM cell information generator 85 will consider the resources which are devoted to the particular connection, which, in turn, so as to permit generally equal sharing of the resources among all of the connections serviced by the output port module 61(*p*).

The Patent Office asserts that the cited portion of Rananand shows "*equal sharing* of the resources among all of the connections" when "buffer occupancy rate is relatively high," which causes throughput to be low due to the buffer being full and dropping transfer rates near or below the minimum required transfer rate (Examiner's Answer mailed April 5, 2007, p. 22-23). The Patent Office argues this shows that emphasis is placed on fairness when many users are close to the required data rate. *Ibid.* Once again, the Patent Office seems to be reading something into Rananand that simply is not there. Rananand is silent as to placing more emphasis on fairness when many users are close to the required data rate. In fact, Rananand does not mention any recognition of whether many users are close to the required data rate. "*[E]qual sharing* of the resources among all of the connections" is not equivalent to "***more*** *emphasis is placed on fairness* ***when many users are close to the required data rate***," as required by the claimed

invention. More emphasis being placed on fairness does not necessarily require equal sharing of resources. In fact, placing more emphasis on fairness may result in non-equal sharing of resources. Moreover, the fact that the "buffer occupancy is relatively high" is not the same as the claimed "*when many users are close to the required data rate.*" The occupancy of the buffer does not relate to whether **many** users are close to the required data rate. Accordingly, for the above reasons, Rananand does not teach or suggest scheduling the data units for transmission based on a prioritization factor such that *more emphasis is placed on fairness when many users are close to the required data rate*, as required by the independent claims of the present invention.

To the extent that the Patent Office is arguing that by following the teachings of Rananand, it might be a possible natural result that occasionally equal sharing of the resources might occur when many users are close to the required data rate, Appellant submits that such a possible result is not what is claimed in the present invention. Claim 1 requires an access point for scheduling the delivery of data that includes a control system that actively schedules the transmission of data based on a prioritization factor such that *more emphasis is placed on fairness when many users are close to the required data rate and more emphasis is placed on maximizing throughput when all users are far from the required data rate.* Thus, the claimed invention requires that the scheduler play an active role by scheduling the data by placing more emphasis on fairness or more emphasis on maximizing throughput depending on whether many users are close to the required data rate, or whether all users are far from the required data rate. Since Rananand does not determine whether or not many users are close to the required data rate or whether all users are far from the required data rate, Rananand does not base its scheduling on these features. In fact, since Rananand teaches increasing the throughput anytime there is available bandwidth (for example, even when many users are close to the required data rate), it is clear that Rananand, does not teach scheduling the delivery of data such that *more emphasis is placed on fairness when many users are close to the required data rate and more emphasis is placed on maximizing throughput when all users are far from the required data rate*, according to the claims of the present invention. Thus, Rananand does not teach the limitation for which it is cited.

In summary, Rananand does not teach or suggest a scheduler or scheduling method in which the scheduling is done such that fairness is emphasized when many users are close to the

required data rate and maximizing throughput is emphasized when the users are far from the required data rate.

Appellant also addresses certain points raised by the Patent Office it its Examiner's Answer. First, the Patent Office refers to the section of Appellant's Appeal Brief on pp. 12-13 that describes the present invention, and alleges that the features upon which Appellant relies are not recited in the rejected claims (Examiner's Answer mailed April 5, 2007, pp. 23-24). Appellant clarifies its position. Appellant is not attempting to read the limitations from the Specification into the claim. Appellant merely was setting forth a description of the present invention to provide background for its argument and to illustrate how one embodiment of the invention accomplishes the adaptive fairness objective where the transmission is scheduled such that more emphasis is placed on fairness when many users are close to the required data rate and more emphasis is placed on maximizing throughput when all users are far from the required data rate. Appellant even noted that the described embodiment is merely one example of the current invention and the claims are not limited to this embodiment (Revised Appeal Brief filed December 19, 2006, p. 12).

In fact, Appellant specifically tied the example from the Specification to the claim language (see Revised Appeal Brief filed December 19, 2006, p. 13, lines 3-7). To repeat the argument, claim 1 recites in part that the control system is adapted to "schedule transmission of each unit of data based on the prioritization factor *such that more emphasis is placed on fairness when many users are close to the required data rate and more emphasis is placed on maximizing throughput when all users are far from the required data rate*." The portion of the Revised Appeal Brief that discussed the Specification merely pointed out that the throughput and fairness component of the claimed prioritization factor has a variable *a*, which varies depending on how close the users are to their respective required minimum throughput rate. Thus, according to the present invention, as *a* increases (this corresponds to the claim language "when all users are far from the required data rate"), then throughput is increased (this corresponds to the claim language "more emphasis is placed on maximizing throughput"). On the other hand, according to the present invention, as *a* decreases (this corresponds to the claim language "when many users are close to the required data rate"), the degree of fairness increases (this corresponds to the claim language "more emphasis is placed on fairness"). Rananand does not teach or suggest a scheduling method where the scheduling apparatus determines whether all users are far away

from the required data rate and whether many users are close to the required data rate and then places more emphasis on fairness or on maximizing throughput based on whether all users are far from the required data rate and whether many users are close to the required data rate. To tie it to the specific claim language of claim 1, Rananand does not teach or suggest a control system adapted to "schedule transmission of each unit of data based on the prioritization factor *such that more emphasis is placed on fairness when many users are close to the required data rate and more emphasis is placed on maximizing throughput when all users are far from the required data rate.*" Instead, Rananand discloses that as long as there is extra bandwidth, the throughput may be increased. (Rananand, col. 4, line 54 through col. 5, line 7). Thus, Rananand does not disclose placing more emphasis on fairness in the situation when many users are close to the required data rate and placing more emphasis on maximizing throughput when all users are far from the required data rate.

Second, Appellant also argued in its Revised Appeal Brief that even under a broad interpretation, the terms "more emphasis," "many users," and "far from the required data rate" must be given some weight and cannot be ignored, as the Patent Office seemingly has (Revised Appeal Brief filed December 16, 2007, pp. 13-14).[1] This was in response to the Patent Office's assertion that the terms "more emphasis," "many users," and "far from the required data rate" are relative terms and are broadly construed (Final Office Action mailed April 24, 2006, pp. 19-20). Appellant submits that under the broadest reasonable interpretation consistent with the Specification that a person of ordinary skill in the art would reach, Rananand does not teach or suggest each and every limitation of the claimed invention.

The Patent Office now responds by stating that Appellant fails to provide a reasonable interpretation of the terms and fails to explain why the interpretation of the Patent Office is unreasonable (Examiner's Answer mailed April 5, 2007, p. 24).[2] Appellant disagrees. In its Revised Appeal Brief, Appellant pointed out that the Patent Office's interpretation was wrong because it ignored, or gave no weight to, the words "more emphasis," "many users," and "when all users are far from the required data rate." (Revised Appeal Brief filed December 16, 2007,

[1] In particular, the Patent Office's analysis seemingly ignores the words "more" and "many" and "when all users are far from the required data rate." (Final Office Action mailed April 24, 2006, pp. 19-20).

[2] Appellant notes that the Patent Office also has failed to provide what it believes to be the proper interpretation of the words at issue. Instead, the Patent Office just makes a conclusory statement that the terms are relative and are broadly construed. Appellant relies on the plain meaning of the claim language.

pp. 13-14).[3] Even if these terms are construed broadly, they cannot be ignored, and they must be given some weight (MPEP § 2143.03; *In re Wilson*, 424 F.2d 1382, 1385 (C.C.P.A. 1970) ("All words in a claim must be considered in judging the patentability of that claim against the prior art.")). Moreover, the words of a claim are given their plain meaning, i.e., the ordinary and customary meaning given to the term by those of ordinary skill in the art. MPEP 2111.01. Thus, while the Patent Office is entitled to give claim terms their broadest reasonable interpretation, this interpretation must be consistent with the specification. *In re Hyatt*, 211 F.3d 1367, 1372 (Fed. Cir. 2000); MPEP § 2111. In addition, the broadest reasonable interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach. *In re Cortright*, 165 F.3d 1353, 1359, (Fed. Cir. 1999); MPEP § 2111. Finally, the interpretation must be reasonable. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1369 (Fed. Cir. 2004); MPEP § 2111.01.

Under even a broad interpretation, Rananand must teach that ***more*** *emphasis is placed on fairness when* ***many*** *users are close to the required data rate and* ***more*** *emphasis is placed on maximizing throughput* ***when all users are far from the required data rate.*** Using the plain meaning of the claim language, Rananand does not mention anything that could be construed as "more emphasis," "when may users are close to the required data rate," and "when all users are far from the required data rate," even under the broadest reasonable interpretation. Thus, Rananand does not teach or suggest placing ***more*** emphasis on maximizing throughput ***when all users are far from the required data rate*** than when all users are not far from the required data rate.[4] In fact, Rananand does not even teach or suggest anything about whether all users are far from the required data rate or what to do if all users are far from the required data rate. In addition, Rananand does not teach or suggest placing ***more*** emphasis on maximizing throughput in the situation ***when all users are far from the required data rate*** than when many users are close to the required data rate. Instead, Rananand only teaches increasing the transfer rate when there is available bandwidth. Thus, Rananand does not teach or suggest that *more emphasis is placed on maximizing throughput when all users are far from the required data rate*, nor does Rananand teach or suggest scheduling the data units for transmission based on a prioritization

[3] Certainly the Patent Office points to nothing in Rananand that equates to the language found in the claim relating to "more emphasis," "many users," and "when all users are far from the required data rate."

[4] Notably, the Patent Office does not assert that Rananand shows that more emphasis is placed on maximizing throughput when all users are far from the required data rate. The Patent Office is improperly trying to read "more" out of the claim.

factor such that *more emphasis is placed on fairness when many users are close to the required data rate*, as required by the claims. Since Rananand does not teach the limitation for which it is cited, and the Patent Office has admitted this element is not taught by Bahl and/or Ketcham, the combination of Bahl, Ketcham, and Rananand does not collectively teach or suggest each and every element of independent claims 1, 10, 19, and 28, and *prima facie* obviousness has not been established.

The Patent Office also alleges that the argument on page 14 of the Revised Appeal Brief - that Rananand fails to teach or suggest scheduling the data units for transmission based on a prioritization factor such that *more emphasis is placed on fairness when many users are close to the required data rate* and *more emphasis is placed on maximizing throughput when all users are far from the required data rate* - does not comply with 37 CFR 1.111(b) because it amounts to a general allegation without specifically pointing out how the language of the claims patentably distinguish them from the references. Appellant respectfully points out that the section referred to by the Patent Office was merely the statement of the argument. Specific details as to how Rananand does not teach or suggest the limitations of the claimed invention were made throughout the Argument section of the Revised Appeal Brief. In particular, the two pages following the statement on page 14 of the Revised Appeal Brief referred to by the Patent Office expound on why Rananand does not teach or suggest the claimed invention (see Revised Appeal Brief filed December 19, 2006, p. 14, line 12 through end of p. 15). These two pages, as well as the Revised Appeal Brief as a whole and this Reply Brief, support the general allegation by specifically pointing out how the language of the claims patentably distinguish them from the references

C. Conclusion

Claims 1, 10, 19, and 28 all recite that the data units are scheduled for transmission based on a prioritization factor such that *more emphasis is placed on fairness when many users are close to the required data rate and more emphasis is placed on maximizing throughput when all users are far from the required data rate*. When the claim is interpreted reasonably by one of ordinary skill in the art, and all words in the claim are considered and given their plain meaning, it is clear that Rananand fails to teach or suggest at least this limitation. Since the Patent Office admits that Bahl and Ketcham fail to disclose a scheduling technique where *more emphasis is*

placed on fairness when many users are close to the required data rate and more emphasis is placed on maximizing throughput when all users are far from the required data rate, and Rananand also fails to teach or suggest this limitation, the combination of Bahl, Ketcham, and Rananand fails to teach or suggest each and every element of the claimed invention. Accordingly, the Patent Office has failed to show a *prima facie* case of obviousness. The dependent claims further define the patentable subject matter of independent claims 1, 10, 19, and 28. As such, the dependent claims also define patentable subject matter. Accordingly, Appellant respectfully submits that the rejections are improper and should be withdrawn, and requests that the Board instruct the Patent Office to allow the pending claims.

Respectfully submitted,

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Date: June 5, 2007
Attorney Docket: 7000-114